

data stream is different from the number of signal points of the constellation for the ECC encoded second data stream; and

a transmitter operable to transmit the modulated signals,

wherein the first data stream has data for demodulation including the number of signal points of the constellation for the ECC encoded second data stream.

25. A signal receiving apparatus comprising:

a receiver operable to receive a transmitted signal to produce a received signal;

a demodulator operable to demodulate the received signal to produce an ECC encoded first data stream and an ECC encoded second data stream,

the transmitted signal having information of a first data stream and a second data stream, both of which are ECC-encoded, wherein each of the ECC encoded first data stream and the ECC encoded second data stream is assigned to a respective constellation in a vector space diagram, and the number of signal points of the constellation for the ECC encoded first data stream is different from the number of signal points of the constellation for the ECC encoded second data stream,

the first data stream having data for demodulation including the number of signal points of the constellation for the ECC encoded second data stream,

wherein said demodulator produces the ECC encoded second data stream according to the data for demodulation;

a first error correction code (ECC) decoder operable to ECC decode the ECC encoded first data stream to produce the first data stream; and

a second error correction code (ECC) decoder operable to ECC decode the ECC encoded second data stream to produce the second data stream,

wherein the first ECC decoder is different from the second ECC decoder.

26. A signal transmission system comprising:

a signal transmission apparatus comprising:

a first error correction code (ECC) encoder operable to ECC encode a first data stream to produce an ECC encoded first data stream;

a second error correction code (ECC) encoder operable to ECC encode a second data stream to produce an ECC encoded second data stream,

wherein the first ECC encoder is different from the second ECC encoder;

a modulator operable to assign each of the ECC encoded first data stream and the ECC encoded second data stream to a respective constellation in a vector space diagram to produce modulated signals wherein the number of signal points of the constellation for the ECC encoded first data stream is different from the number of signal points of the constellation for the ECC encoded second data stream; and

a transmitter operable to transmit the modulated signals; and

a signal receiving apparatus comprising:

a receiver operable to receive a transmitted signal to produce a received signal;

a demodulator operable to demodulate the received signal to produce the ECC encoded first data stream and the ECC encoded second data stream,

wherein the first data stream has data for demodulation including the number of signal points of the constellation for the ECC encoded second data stream, and said demodulator produces the ECC encoded second data stream according to the data for demodulation;

a first error correction code (ECC) decoder operable to ECC decode the ECC encoded first data stream to produce the first data stream; and

a second error correction code (ECC) decoder operable to ECC decode the ECC encoded second data stream to produce the second data stream,

wherein the first ECC decoder is different from the second ECC decoder.

27. A signal transmission method comprising:

ECC encoding a first data stream to produce an ECC encoded first data stream;

ECC encoding a second data stream to produce an ECC encoded second data stream,

wherein the ECC encoding of the first data stream is different from the ECC encoding of the second data stream;

assigning each of the ECC encoded first data stream and the ECC encoded second data stream to a respective constellation in a vector space diagram to produce modulated signals wherein the number of signal points of the constellation for the ECC encoded first data stream is different from the number of signal points of the constellation for the ECC encoded second data stream; and  
transmitting the modulated signals;

wherein the first data stream has data for demodulation including the number of signal points of the constellation for the ECC encoded second data stream.

28. A signal receiving method comprising:

receiving a transmitted signal to produce a received signal;

demodulating the received signal to produce an ECC encoded first data stream and an ECC encoded second data stream;

the transmitted signal having information of a first data stream and a second data stream, both of which are ECC-encoded, wherein each of the ECC encoded first data stream and the ECC encoded second data stream is assigned to a respective constellation in a vector space diagram, and the number of signal points of the constellation for the ECC encoded first data stream is different from the number of signal points of the constellation for the ECC encoded second data stream;

the first data stream having data for demodulation including the number of signal points of the constellation for the ECC encoded second data stream;

wherein said demodulating produces the ECC encoded second data stream according to the data for demodulation;

ECC decoding the ECC encoded first data stream to produce the first data stream; and

ECC decoding the ECC encoded second data stream to produce the second data stream;

wherein the ECC decoding of the ECC encoded first data stream is different from the ECC decoding of the ECC encoded second data stream.

29. A signal transmitting and receiving method comprising:  
ECC encoding a first data stream to produce an ECC encoded first data stream;  
ECC encoding a second data stream to produce an ECC encoded second data stream,  
wherein the ECC encoding of the first data stream is different from the ECC encoding of the  
second data stream;  
assigning each of the ECC encoded first data stream and the ECC encoded second data stream  
to a respective constellation in a vector space diagram to produce modulated signals wherein the  
number of signal points of the constellation for the ECC encoded first data stream is different from  
the number of signal points of the constellation for the ECC encoded second data stream;  
transmitting the modulated signals;  
receiving a transmitted signal to produce a received signal;  
demodulating the received signal to produce the ECC encoded first data stream and the ECC  
encoded second data stream,  
wherein the first data stream has data for demodulation including the number of signal points  
of the constellation for the ECC encoded second data stream, and said demodulating produces the  
ECC encoded second data stream according to the data for demodulation;  
ECC decoding the ECC encoded first data stream to produce the first data stream; and  
ECC decoding the ECC encoded second data stream to produce the second data stream,  
wherein the ECC decoding of the ECC encoded first data stream is different from the ECC  
decoding of the ECC encoded second data stream.